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EXAMINER	
CHEN, PO WEI	
ART UNIT	**PAPER NUMBER**
2676	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/062,978	Applicant(s) SASAKI, NOBUO	
	Examiner Po-Wei (Dennis) Chen	Art Unit 2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claims 19 are pending in this application. Claims 1, 3, 5, 7, 9, 11, 13, 15, 17 and 19 are independent claims.

The present title of the invention is "Image Generation Method and Device Used Therefor".

This action is non-final.

The Group Art Unit of the Examiner case is now 2676. Please use the proper Art Unit number to help us serve you better.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 7-8, 13-14 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Stroyan (US 5,923,333).

3. Regarding claim 1, Stroyan discloses a fast alpha transparency rendering method comprising:

An image generation method (lines 1-3 of abstract; producing an image corresponds to image generation);

Providing initial object images each having a coefficient of semi-transparency (lines 57-63 of column 5 and Fig. 2; while claim recites coefficient of semi-transparency, it is noted that each transparent object has different alpha values (coefficient) depending on the degrees of transparency) and an assigned distance from a virtual viewpoint, ones of the initial object images

to be subjected to predetermined image processing (lines 41-44 of column 1 and lines 1-13 and 45-51 of column 5 and Fig. 2; depending on the viewpoint given, objects have different z-values to indicate the distance with respect to the viewpoint);

Subjecting the ones of the initial object images to the predetermined image processing to produce resultant object images based on the coefficients of semi-transparency and the assigned distances from the virtual viewpoint so that the initial object image having an assigned distance closest to the virtual viewpoint is processed last (lines 1-13 and 41-51 of column 5, lines 23-31 of column 6 and lines 24-26 of column 7 and Fig. 2 and 4; it is noted that objects have different z-values (assigned distance) depending on the viewpoint given and alpha values (coefficients) depending on the degree of transparency to produce resulting image; also, front-most objects correspond to objects having distance closest to the viewpoint).

4. Regarding claim 2, Stroyan discloses a fast alpha transparency rendering method comprising:

The predetermined image processing is a process for converting the ones of the initial object images into semi-transparent object images depending on the coefficients of semi-transparency (lines 41-63 of column 5 and lines 43-67 of column 6; the image objects are being processed using alpha values (coefficients) which depending on the degree of transparency to produce resulting image).

5. Regarding claim 7, as statements presented above, with respect to claim 1 are incorporated herein.

6. Regarding claim 8, as statements presented above, with respect to claim 2 are incorporated herein.

7. Regarding claim 13, as statements presented above, with respect to claim 1 are incorporated herein.

8. Regarding claim 14, as statements presented above, with respect to claim 2 are incorporated herein.

9. Regarding claim 19, as statements presented above, with respect to claim 1 are incorporated herein.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 3, 5, 9, 11, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stroyan (US 5,923,333) and further in view of Soderberg et al. (US 5,471,567; refer to as Soderberg herein).

12. Regarding claim 3, Stroyan discloses a fast alpha transparency rendering method comprising:

An image generation method (lines 1-3 of abstract; producing an image corresponds to image generation);

Providing a frame image storage area (element 120 of Fig. 1);

Providing initial object images each having a coefficient of semi-transparency and an assigned distance from a virtual viewpoint, ones of the initial object images to be subjected to predetermined image processing; subjecting the ones of the initial object images to the

predetermined image processing to produce resultant object images (lines 40-44 of column 1 and lines 54-67 of column 4 and lines 1-51 of column 5 and Fig. 2-4; each transparent object has z-values (distance from a viewpoint) and alpha values (coefficient of semi-transparency) and is being rasterized and processed (predetermined image processing) to produce resultant object images);

Subjecting the resultant object images to predetermined comparison processing based on the assigned distances from the virtual viewpoint to produce compared object images (lines 40-44 of column 1 and lines 41-48 of column 5; each transparent object is being processed using z-buffer comparison based on the z-values (assigned distance from the viewpoint) to produce compared images);

Drawing the compared object images in the frame image storage area without storing assigned distances of the compared object images from the virtual viewpoint (lines 41-51 of column 5 and Fig.2; it is noted that the z-values (assigned distance from the viewpoint) is only used to compare and determine the position of the object in the frame buffer and is not store; Also, by blending color pixel values and sending to the frame buffer, it can be consider as being draw to the frame buffer);

Separately subjecting the ones of the initial object images to the predetermined comparison processing but not to the predetermined image processing to produce compared initial object images (lines 40-43 of column 3 and lines 48-52 of column 4 and Fig. 2; while claim recites predetermined comparison processing, it is noted that the opaque objects are being processed using z-buffer comparison to determine the position placed in the frame buffer; Also, the opaque objects are not subjected to predetermined image processing (alpha blending)),

Drawing the compared initial object images in the frame image storage area while storing assigned distances of the compared initial object images from the virtual viewpoint (lines 48-52 of column 4 and Fig. 2; while claim recites drawing, it is noted that the compared opaque objects pixel values are being sent to frame buffer, thus can be considered as drawing in the frame storage area and z-buffer is also being used to store the distance from the viewpoint (z-values) for each pixel);

Subjecting the compared initial object images stored in the frame image storage area to the predetermined image processing without being followed by the predetermined comparison processing to produce processed images; and combining the processed images with the compared object images previously stored in the frame image storage area to produce synthesized images (lines 40-50 of column 3, lines 45-58 of column 4, lines 41-67 of column 5 and lines 1-31 of column 6 and Fig. 2 and 4; it is noted that the opaque objects are being processed with the transparent objects and are not subjected to the z-buffer comparison of the transparent objects. Finally, the resultant (synthesized) image is produced by blending pixel values of opaque objects and transparent objects).

Stroyan does not disclose a second frame storage area. Soderberg discloses an image element depth buffering using two buffers utilizing the method (lines 1-10 of abstract and lines 29-32 of column 4). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Soderberg to provide a greater precision of displaying objects (lines 17-22 of column 2). Also, both Stroyan and Soderberg disclose a method of displaying objects of different depth from a viewpoint utilizing frame buffer.

13. Regarding claim 5, Stroyan discloses a fast alpha transparency rendering method comprising:

An image generation method (lines 1-3 of abstract; producing an image corresponds to image generation);

Providing a frame image storage area (element 120 of Fig. 1);

Providing initial object images each having a coefficient of semi-transparency (lines 57-63 of column 5 and Fig. 2; while claim recites coefficient of semi-transparency, it is noted that each transparent object has different alpha values (coefficient) depending on the degrees of transparency) and an assigned distance from a virtual viewpoint, ones of the initial object images to be subjected to predetermined image processing (lines 41-44 of column 1 and lines 1-13 and 45-51 of column 5 and Fig. 2; depending on the viewpoint given, objects have different z-values to indicate the distance with respect to the viewpoint);;

Subjecting other ones of the initial object images not to be subjected to the predetermined image processing to predetermined comparison processing based on the assigned distances from the virtual viewpoint to produce first compared object images, and drawing the first compared object images in the frame image storage area while storing assigned distances of the first compared object images from the virtual viewpoint (lines 40-43 of column 3 and lines 48-52 of column 4 and Fig. 2; the opaque objects are being processed using z-buffer comparison to determine the position placed in the frame buffer and by sending pixel values to the frame buffer, it can be considered as drawing in the buffer; Also, the opaque objects are not subjected to predetermined image processing (alpha blending));

Subjecting the ones of the initial object images to the predetermined image processing to produce resultant object images (lines 54-58 of column 4 and lines 26-40 of column 5 and Fig. 2-3);

Subjecting the resultant object images to the predetermined comparison processing to produce second compared object images (lines 41-48 of column 5 and Fig. 2), and then combining in the first frame image storage area the second compared object images with the first compared object images to produce first frame images without storing assigned distances of the first frame images from the virtual viewpoint (lines 45-51 of column 5 and Fig. 2; it is noted that the transparent objects' pixel color is being blended with the opaque objects' pixel value in the frame buffer to produce resultant object image);

Separately subjecting the ones of the initial object images to the predetermined comparative processing but not to the predetermined image processing to produce compared initial object images, and then drawing the compared initial object images in the frame image storage area while storing assigned distances of the compared initial object images from the virtual viewpoint (lines 40-43 of column 3 and lines 48-52 of column 4 and Fig. 2; the opaque objects are being processed using z-buffer comparison to determine the position placed in the frame buffer and by sending pixel values to the frame buffer, it can be considered as drawing in the buffer; Also, the opaque objects are not subjected to predetermined image processing (alpha blending));

Subjecting the compared initial object images stored in the frame image storage area to the predetermined image processing without being followed by the predetermined comparison processing to produce processed images; and combining the processed images with the frame

images previously stored in the frame image storage area to produce synthesized images (lines 40-50 of column 3, lines 45-58 of column 4, lines 41-67 of column 5 and lines 1-31 of column 6 and Fig. 2 and 4; it is noted that the opaque objects are being processed with the transparent objects and are not subjected to the z-buffer comparison of the transparent objects. Finally, the resultant (synthesized) image is produced by blending pixel values of opaque objects and transparent objects).

Stroyan does not disclose a second frame storage area. Soderberg discloses an image element depth buffering using two buffers utilizing the method (lines 1-10 of abstract and lines 29-32 of column 4). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Soderberg to provide a greater precision of displaying objects (lines 17-22 of column 2). Also, both Stroyan and Soderberg disclose a method of displaying objects of different depth from a viewpoint utilizing frame buffer.

14. Regarding claim 9, as statements presented above, with respect to claim 3 are incorporated herein.

15. Regarding claim 11, as statements presented above, with respect to claim 5 are incorporated herein.

16. Regarding claim 15, as statements presented above, with respect to claim 3 are incorporated herein.

17. Regarding claim 17, as statements presented above, with respect to claim 5 are incorporated herein.

18. Claims 4, 6, 10, 12, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stroyan (US 5,923,333) and Soderberg et al. (US 5,471,567; refer to as Soderberg herein) as applied to claims 3, 5, 9, 11, 15 and 17 above, and further in view of Smith (US 4,730,261).

19. Regarding claim 4, Stroyan discloses a fast alpha transparency rendering method comprising:

The predetermined comparison processing is a process for comparing Z coordinate values expressing the assigned distances from the virtual viewpoint of a first group of pixels composing the object images and a second group of pixels composing the object images (lines 40-44 of column 1 and lines 41-51 of column 5; the primitive of object corresponds to a group of pixels);

The predetermined comparison processing retaining only the pixel having a Z coordinate value closest to the virtual viewpoint, and omitting the pixel having a Z coordinate value which is not closest to the virtual viewpoint (lines 1-11 of column 7; front-most primitive corresponds to group of pixels that are closest to the viewpoint; In the first pass of the process, only the pixels of the front-most primitive are being utilized to create a shell of the scene while other primitives are omitted).

The combination of Stroyan and Soderberg does not disclose the pixels each having first X-Y coordinate values in a two-dimensional plane, and the pixels in the second group of pixels each having second X-Y coordinate values in the two-dimensional plane which are identical to the first X-Y coordinate values. Smith discloses a solids modeling generator utilizing the method (lines 34-37 of column 5 and lines 1-26 of column 24). It would have been obvious to one of orindary skill in the art at the time of invention to utilize the teaching of Smith to provide

a faster image processing (lines 59-65 of column 3, Smith). Also, both Stroyan and Smith are directed to a method of utilizing z-buffer to determine position of surface point from a viewpoint.

20. Regarding claim 6, as statements presented above, with respect to claim 4 are incorporated herein.

21. Regarding claim 10, as statements presented above, with respect to claim 4 are incorporated herein.

22. Regarding claim 12, as statements presented above, with respect to claim 6 are incorporated herein.

23. Regarding claim 16, as statements presented above, with respect to claim 4 are incorporated herein.

24. Regarding claim 18, as statements presented above, with respect to claim 6 are incorporated herein.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-8365. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C Bella can be reached on (703) 308-6829. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen
Examiner

Matthew C. Bella

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Art Unit 2676

Po-Wei (Dennis) Chen
November 18, 2003

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